



SCIENCE PROCESS SKILL AMONG HIGHER SECONDARY SCHOOL STUDENTS

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ABSTRACT

Science process skill will positively influence the academic achievement of the students in science subjects. Present study has given a detailed account of science process skill among higher secondary school students of Wayanad district of Kerala state. 465 higher secondary school students from various government and aided higher secondary schools of Wayanad district is taken as sample for the study. Test of process skill in science is used to collect data. Results of the study showed that higher secondary school student of wayanad district possess an average level of science process skill in science

KEYTERMS: Science process skill, higher secondary school students.

INTRODUCTION:

Science Process Skills (SPS) or Process Skill in Science is the thinking skills that scientists use to construct knowledge in order to solve problems and formulate results. The, scientific thinking, critical thinking and scientific method are also terms that have been used to describe these skills, but last two decades, the phrase "Science Process Skills" has become more common (Bybee & DeBoer, 1993). Scientists use science process skill to discover scientific knowledge when they conduct investigations (Abruscato, 1995), which is explained as predicting, describing, adapting and explaining to particular phenomena of the natural environment (Carin, Bass, & Contant, 2005). Some researchers (Brotherton & Preece, 1995) opinioned that two level hierarchical model of integrated and basic skills will help to explain science process skill.

Balfakih (2010) studied the UAE's pre-service and in service teachers competency in the integrated process skill science. Study revealed that in service teachers perform better than pre service teachers. Campbell (1977) studied science process skill instruction and planning of teachers. Study found the effects of teaching the basic science process skills to pre service teachers on their (1) knowledge of process skills, (2) attitudes toward the basic science process skills, (3) selection of process objectives for a science unit, and (4) lesson planning practices. Study revealed that instruction in basic science process skills had a significant effect on teachers selection of process objectives for a science unit, cognitive achievement and their lesson planning practices.

The Science Process Skills Help students to investigate scientific world around his environment and to construct science knowledge and scientific concepts, so teachers should have a good understanding and knowledge of these process skills. However, defining and identifying the science process skill is not a simple task. In this study investigators made an attempt to study the level of science process skill among higher secondary school students.

OBJECTIVES OF THE STUDY:

1. To find the level of science process skill among higher secondary school students.
2. To test whether there exists any significant difference in Science process skill among higher secondary students between the comparable subsamples based on Gender, Locale and Type of Management.

HYPOTHESIS OF THE STUDY:

1. There is no significant difference in Science process skill of higher secondary students between Boys and Girls.
2. There is no significant difference in Science process skill of higher secondary students between Urban and rural students.
3. There is no significant difference in Science process skill of higher secondary students between Government and Aided school students.

METHODOLOGY:

Survey method was used conduct study

Sample: 465 higher secondary school students from various government and aided higher secondary schools of Wayanad district is taken as sample for the study.

Tool: The present study used Test of Process Skill in Science (Arjunan, D., & Faisal M, 2013) as tool for data collection. The questions in the tool able to measure following components of Science Process Skill viz., Observation, Classification, Prediction, Inferring, Hypothesizing and Controlling Variables. Test consists of 30 question and each question carry one mark for right answer and zero for wrong answer. The sum of the score for all the items for an individual represents his score for Process Skill test.

Statistical techniques used for the study: Percentile analysis and independent sample t test were used to analyse the data.

RESULT AND DISCUSSION:

Data collected from higher secondary school were analysed using suitable statistical techniques. Data analysis and results were presented under relevant heading.

Level of science process skill among higher secondary school students:

Level of science process skill among higher secondary school students of wayanad were analysed using mean score analysis and percentile analysis. Data and results are presented in table.1

Table. 1: data and result of mean and percentile analysis of science process skill among higher secondary school students

Total sample	Mean of total sample	Percentile	Percentile value
465	15.71	10	10.00
		20	11.00
		30	13.00
		40	14.00
		50	15.00
		60	17.00
		70	19.00
		80	20.00
		90	22.00

From table 1 it is clear that the mean score of science process skill among higher secondary school students is 15.71. The mean score is almost equal to the mid score (15) of the tool. Mean score analysis suggest that level of science process skill among higher secondary school students is Average. Percentile analysis shows that 50th percentile score of science process skill is 15. That means 50 % higher secondary school students lies below and 50 % higher secondary school students lies above the score 15. Percentile analysis support the results obtained from the mean score analysis. So it can be concluded that higher secondary school students of wayanad district possess an Average level of science process skill.

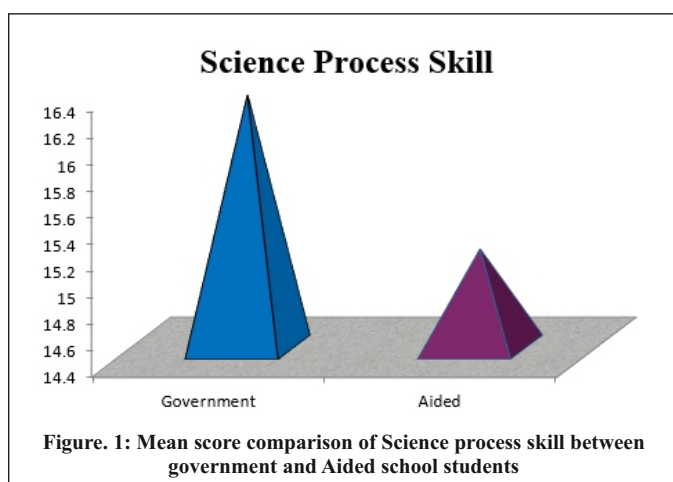
Mean score comparison of Science Process Skill based on relevant subsamples:

Comparison of mean Process Skills in Science on the basis of relevant subsample Gender, Locale and type of management locale were tested. For this purpose, the mean and standard deviation of Process Skills in Science of respective sub groups were subjected to the two-tailed test of significance of difference. The data and result of t-test between the mean scores of Process Skills in Sciences for relevant subsample are given in table.2

Table. 2: Data and results of Comparison of Mean Scores of Process Skills in Sciences for relevant subsample based on Gender, Locale and Type of Management

Variable	Sample	Gender	N	Mean	Std. Deviation	t- Value	Level of significance
Process Skill in Science	Gender	Boys	186	15.56	4.49	0.56	NS
		Girls	279	15.82	4.76		
	Locale	Urban	166	16.10	4.66	1.31	NS
		Rural	299	15.51	4.64		
	Type of Management	Government	232	16.30	4.88	2.72	0.01
		Aided	233	15.14	4.34		

From the Table 2, the observed t-value for science process skill of Boys and Girls are 0.56. The obtained t-value could not reach the limit of 0.05 levels in Process Skills in Science. This indicates that there is no significant difference in the mean scores of Process Skills in Science between Boys and Girls. The obtained t-value for science process skill of urban and rural students is 1.31. The obtained t value is less than 1.96. This indicates that there is no significant difference in the mean scores of Science Process Skill between Urban and Rural students. It is quite evident from the above table that there is a significant difference in the Science Process Skill between Government and Aided school students. Further the Science Process Skill is found to be high among Government school students as compared to the Aided school students. Graphical representation of mean comparison of Science process skill between government and Aided school students are presented in figure.1

**Figure. 1: Mean score comparison of Science process skill between government and Aided school students**

CONCLUSION:

Process approach teaching is effective for proper development and understanding of Process Skills in Science and also for the academic Achievement. Though the investigator carried out these studies on a small sample, the findings throw light on the current educational practice in Higher Secondary classes. Science is a process as well as a product. The understanding of this process is possible only when the individual gets thorough knowledge about the skills involved in each process. Without the understanding of skills, one cannot follow or study about the Scientific Processes. So the students have to be trained for better understanding of skills. The teacher has a pivotal role in administering changes among children. The approach used by the teacher, therefore, should be to bring a desirable change in the student. The major objective of the study is to find out the level of science process skill among higher secondary school students of wayanad district. Results of the present study concluded that,

1. The higher secondary school students of wayanad district possess an average level of science process skill.
2. There is no significant difference in Science process skill of higher secondary students between Boys and Girls.
3. There is no significant difference in Science process skill of higher secondary students between Urban and rural students.
4. There is a significant difference in Science process skill of higher secondary students between Government and Aided school students.

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